

REMARKS

At the outset, the Examiner is thanked for the thorough review and consideration of the subject application. The non-Final Office Action of July 3, 2002 has been received and contents carefully reviewed.

Claims 1-28 are currently pending. Claims 1 and 11 have been amended. Claims 16-28 have been allowed.

The Examiner rejected claims 1, 5, 7-9, 11, 12, 14, and 15 under 35 USC 102(b) as being clearly anticipated by Shimada et al. (US Pat. No. 5,949,507); and rejected claims 2-4, 6, 10, and 13 under 35 USC 103(a) as being unpatentable over Shimada et al. (US Pat. No. 5,949,507). These rejections are respectfully traversed.

Claim 1 is allowable at least for the reason that claim 1 recites a combination of elements including dry-etching a surface of the passivation layer with a gas without using a photo mask such that the surface is embossed; and forming a reflective electrode on the embossed surface of the passivation layer such that an exterior surface of the reflective electrode is embossed.

Claim 11 is allowable at least for the reason that claim 11 recites a combination of elements including a passivation layer on the data line, source electrode, and drain electrode, an entire surface of the passivation layer being embossed; and an embossed reflective electrode on the passivation layer.

None of the cited references teaches or suggests each and every element of the claims. None of the cited references, singly or in combination, teaches or suggests at least these features of the claims.

"A claim is anticipated only if each and every element as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987). "The

identical invention must be shown in as complete detail as is contained in the ... claim."

Richardson v. Suzuki Motor Co., 868 F.2d 1226, 1236, 9 USPQ2d 1913, 1920 (Fed. Cir. 1989).

The elements must be arranged as required by the claim, but this is not an *ipsissimis verbis* test, i.e., identity of terminology is not required. *In re Bond*, 910 F.2d 831, 15 USPQ2d 1566 (Fed. Cir. 1990).

Each and every element as set forth in claims 1 and 11 is not described in a single prior art reference. On page 2 of the Office Action, the Examiner refers to column 4, lines 44-60 of Shimada et al. by stating that the references teaches "dry etching an organic resin surface and then depositing aluminum on that surface was a conventional method of forming a reflective electrode." However, column 4, lines 44-60 of Shimada et al. discusses a method of forming a reflecting plate on an insulating resin layer having an uneven surface in US Patent No. 4,519,678 to Komatsubara et al. The method is described as follows: "[t]hen, a resist pattern is formed thereon by photolithography, which is then used as a mask when performing wet-etching or dry-etching (RIE, etc.) so that indentations are formed on the resin layer."

Use of an extra reference in a 35 USC § 102 rejection is proper, for example, to show that a characteristic not disclosed in a reference is inherent. See MPEP 2131. "To serve as an anticipation when the reference is silent about the asserted inherent characteristic, such gap in the reference may be filled with recourse to extrinsic evidence. Such evidence must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill." *Continental Can Co. USA v. Monsanto Co.*, 948 F.2d 1264, 1268, 20 USPQ2d 1746, 1749 (Fed. Cir. 1991). The Examiner used the Komatsubara et al. reference to show that the method was conventional.

Applicant respectfully submits that the rejection under 35 USC § 102(b) is improper as the rejection does not use one single reference to show anticipation, but instead the rejection is a

combination of references. Applicant request withdrawal of the rejection under 35 USC § 102(b).

Additionally, Shimada et al. does not teach or suggest the claimed invention as a whole. *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 218 USPQ 871 (Fed. Cir. 1983); *Schenck v. Nortron Corp.*, 713 F.2d 782, 218 USPQ 698 (Fed. Cir. 1983); see also *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976). The invention of this application comprises a method for an array substrate of a liquid crystal device including an embossed passivation layer and reflective electrode in claim 1 and an embossed reflective electrode in claim 11. Shimada et al. may teach a passivation layer and reflective electrode formed using specific processes and specific apparatuses, but fail to teach or suggest explicitly or implicitly embossing the surface of the passivation layer using dry etching with a gas without using a photo mask as recited by claim 1, and, an entire surface of the passivation layer being embossed; and an embossed reflective electrode as recited by claim 11.

Shimada et al. is not attempting to solve similar problems with the same solution. Shimada et al. states: [t]hen, as illustrated in FIG. 3B, a photo mask 13 is disposed above the organic insulating film 12, and then a light beam is radiated from above the photo mask 13 as indicated by arrows in FIG. 3B (exposure procedure).” “Consequently, as illustrated in FIG. 3C, a number of minute protrusions 14a' and 14b' having different heights which correspond to the pattern holes 13a and 13b are formed on the surface of the substrate 31.” See column 15, lines 6-39. “Moreover, protrusions 89a are formed in the region of the organic insulating film 89 where the reflecting electrode (pixel electrode) 90 is to be formed.” See column 19, lines 4-13. Further, “[n]ext, dry-etching is performed on the organic insulating layer 101 by using the protrusions 104a' and 104b' of the photoresist as a mask, and the protrusions 104a' and 104b' are transferred onto the organic insulating layer 101.” See column 20, lines 19-31.

The present invention does not use a photo mask to dry-etch a surface of the passivation layer with a gas such that the surface is embossed. "[A] patentable invention may lie in the discovery of the source of a problem even though the remedy may be obvious once the source of the problem is identified. This is part of the 'subject matter as a whole', which should always be considered in determining the obviousness of an invention under 35 U.S.C. § 103." *In re Sponnoble*, 405 F.2d 578, 585, 160 USPQ 237, 243 (CCPA 1969). However, "discovery of the cause of a problem . . . does not always result in a patentable invention. . . . [A] different situation exists where the solution is obvious from prior art which contains the same solution for a similar problem." *In re Wiseman*, 596 F.2d 1019, 1022, 201 USPQ 658, 661 (CCPA 1979) (emphasis in original).

Furthermore, the Examiner has not pointed out a particular finding as to the specific understanding or principle within the knowledge of a skilled artisan, either expressly or by implication that would have motivated one with no knowledge to combine or modify Shimada et al. Applicant respectfully submits that no proper motivation or suggestion is found for one of ordinary skill in the art to modify Shimada et al. to arrive at the claimed method of fabricating an array for a liquid crystal display device. Further, such combination is suggested only by the claimed invention, which is considered impermissible hindsight reconstruction. Through the combination of references used by the Examiner, he has taken a specific aspect of the claim, i.e., dry etching the passivation layer, to be the only advantage of the invention, and disregarded the other elements of the claim. Applicant respectfully submits that the Examiner has failed to establish a *prima facie* case of obviousness. Applicant respectfully requests that the rejection under 35 USC § 103(a) be withdrawn.

Accordingly, Applicants respectfully submit that claims 1-15 are allowable over the cited references.

In view of the above, each of the presently pending claims in this application is believed to be in immediate condition for allowance. Accordingly, the Examiner is respectfully requested to withdraw the outstanding rejection of the claims and to pass this application to issue.

Attached hereto is a marked-up version of the changes made to the claims by the current amendment. The attached page is captioned **"Version with markings to show changes made."**

If for any reason the Examiner finds the application other than in condition for allowance, the Examiner is invited to call the undersigned attorney at (202) 496-7413 to discuss the steps necessary for placing the application in condition for allowance. All correspondence should continue to be sent to the below-listed address.

If these papers are not considered timely filed by the Patent and Trademark Office, then a petition is hereby made under 37 C.F.R. §1.136, and any additional fees required under 37 C.F.R. §1.136 for any necessary extension of time, or any other fees required to complete the filing of this response, may be charged to Deposit Account No. 50-0911. Please credit any overpayment to deposit Account No. 50-0911.

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Respectfully submitted,

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Version with markings to show changes made

Please amend the claims as follows (A Marked-up version of the amended claims is attached):

1. (Amended) A fabricating method for an array substrate of a liquid crystal display device, the method comprising:

forming a gate line including a gate electrode on a substrate;

forming a gate-insulating layer on the substrate, the gate-insulating layer covering the gate line and gate electrode;

forming an active layer on the gate-insulating layer;

forming a data line, a source electrode and a drain electrode on the active layer;

forming a passivation layer on the gate-insulating layer, the passivation layer covering the data line, source electrode and drain electrode;

dry-etching a surface of the passivation layer with a gas without using a photo mask such that the surface is embossed; and

forming a reflective electrode on the embossed surface of the passivation layer such that an exterior surface of the reflective electrode is embossed.

11. (Amended) A liquid crystal display device comprising:

upper and lower substrates with a liquid crystal layer interposed therebetween;

a gate line and a gate electrode on the lower substrate;

a gate-insulating layer on the lower substrate, the gate-insulating layer covering the gate line and gate electrode;

an active layer on the gate-insulating layer;

a source electrode and a drain electrode on the active layer;

a data line on the gate-insulating layer;

a passivation layer on the data line, source electrode, and drain electrode, an entire surface of the passivation layer being embossed; and

an embossed reflective electrode on the passivation layer.